WHAT IS CLAIMED IS:

1. A system for re-routing signals from an affected optical path in an optical network, comprising:

a first node configured to generate a message upon detecting a condition indicating that the signals from the affected optical path need to be re-routed via a protection path to the first node, the first node is further configured to, upon generating the message, reserve a wavelength in the protection path, wherein the wavelength corresponds to the signals from the affected optical path so as to allow the signals from the affected optical path to be re-routed via the protection path;

at least one intermediate node configured to receive and transmit the message; and

a second node configured to receive the message from the at least one intermediate node and reserve the wavelength in the protection path based on the information provided in the message, the second node is further configured to, upon receiving the message, generate an acknowledgment message to be transmitted to the first node via the at least one intermediate node.

2. The system according to claim 1 wherein the at least one intermediate node is further configured to reserve the wavelength in the protection path based on information provided in the message.

3. The system according to claim 1 further comprising:

contention control logic configured to resolve priority between the message and a second message with respect to reserving the wavelength in the protection path.

4. The system according to claim 3 wherein the contention control logic is associated with the first node, the at least one intermediate node and the second node.

5. The system according to claim 4 wherein:

if the contention control logic determines at the first node that the message does not have priority over the second message, the first node is caused to store the message in a queue for subsequent processing;

if the contention control logic determines at the at least one intermediate node that the message does not have priority over the second message, the at least one intermediate node is caused to generate and transmit a first reject message to the first node; and

if the contention control logic determines at the second node that the message does not have priority over the second message, the second node is caused to generate and transmit a second reject message to the first node.

6. The system according to claim 1 wherein upon receiving the acknowledgment message, the at least one intermediate node and the first node are ready to carry the signals re-routed from the affected optical path via the protection path using the reserved wavelength.

7. The system according to claim 6 wherein upon receiving the acknowledgment message and prior to the at least one intermediate node and the first node become ready to carry the signals re-routed from the affected optical path, the at least one intermediate node and the first node each check to determine whether the message is still valid.

8. The system according to claim 1 wherein the message includes a message type field, a first node ID field, a second node ID field, a wavelength ID field, and a failure type field.

9. The system according to claim 8 wherein the message further includes a priority field.

10. The system according to claim 1 wherein the optical network is a bi-directional path switched ring network.

11. The system according to claim 1 wherein the condition is caused by a failure relating to the affected optical path.

12. The system according to claim 1 wherein the condition is caused by network maintenance to be performed on the affected optical path.

13. A system for re-routing signals from an affected optical path, comprising:

a first node configured to generate a message upon detecting a condition indicating that the signals from the affected optical path need to be re-routed via a protection path to the first node;

first contention control logic associated with the first node and configured to, upon generation of the message by the first node, determine whether a wavelength in the protection path is available, wherein the wavelength corresponds to the signals from the affected optical path so as to allow the signals from the affected optical path to be re-routed via the protection path, and wherein if it is determined that the wavelength is available, the first contention control logic causes the first node to reserve the wavelength and forward the message, and if it is determined that the wavelength is not available, the first contention control logic causes the first node to store the message in a queue for subsequent processing;

at least one intermediate node configured to receive the message;

intermediate contention control logic associated with the at least one intermediate node and configured to determine whether the wavelength is available, wherein if it is determined that the wavelength is available, the intermediate contention control logic causes the at least one intermediate node to reserve the wavelength and forward the message, and if it is determined that the wavelength is not available, the intermediate contention control logic causes the at least one intermediate node to generate and transmit a first reject message to the first node; and

a second node configured to receive the message from the at least one intermediate node; and

second contention control logic associated with the second node and configured to, upon receiving the message, determine whether the wavelength is available, wherein if it is determined that the wavelength is available, the second contention control logic causes the second node to reserve the wavelength and generate an acknowledgment message to be transmitted to the first node via the at least one intermediate node, and if it is determined that the wavelength is not available, the second contention control logic causes the second node to generate and transmit a second reject message to the first node;

wherein:

upon transmitting the acknowledgment message, the second node is ready to re-route the signals from the affected optical path to the protection path using the wavelength; and

upon receiving the acknowledgment message, the at least one intermediate node and the first node each check to determine whether the message is still valid and, if the message is still valid, the at least one intermediate node and the first become ready to carry the signals re-routed from the affected optical path via the protection path using the wavelength.

14. The system according to claim 13 wherein the message includes a message type field, a first node ID field, a second node ID field, a wavelength ID field, and a failure type field.

15. The system according to claim 14 wherein the message further includes a priority field.

16. The system according to claim 13 wherein the optical network is a bi-directional path switched ring network.

17. The system according to claim 13 wherein the condition is caused by a failure relating to the affected optical path.

18. The system according to claim 13 wherein the condition is caused by network maintenance to be performed on the affected optical path.

19. An optical network, comprising:

a destination node configured to receive signals transmitted via an optical path, and generate a message upon detecting a condition indicating that the signals transmitted via the optical path need to be re-routed via a protection path, the destination node is further configured to, upon generating the message, reserve a wavelength in the protection path, wherein the wavelength corresponds to the signals so as to allow the signals to be re-routed from the optical path to the protection path;

one or more intermediate nodes each configured to receive and transmit the message and reserve the wavelength in the protection path based on information provided in the message; and

a source node configured to transmit the signals via the optical path and, upon receiving the message from an intermediate node, reserve the wavelength in the protection path so as to allow the signals to be re-routed from the optical path to the protection path and generate an acknowledgment message to be transmitted to the destination node via the one or more intermediate nodes.

20. The optical network according to claim 19 further comprising:

contention control logic configured to resolve priority between the message and a second message with respect to reserving the wavelength in the protection path.

21. The optical network according to claim 20 wherein the contention control logic is associated with the destination node, the one or more intermediate nodes and the source node.

22. The optical network according to claim 19 wherein:

upon transmitting the acknowledgment message, the source node is ready to re-route the signals from the optical path to the protection path using the reserved wavelength; and

upon receiving the acknowledgment message, the one or more intermediate nodes and the destination node are ready to carry the signals re-routed from the optical path via the protection path using the reserved wavelength.

23. The optical network according to claim 22 wherein upon receiving the acknowledgment message and prior to the one or more intermediate nodes and the destination node become ready to carry the signals re-routed from the optical path, the one or more intermediate nodes and the destination node each check to determine whether the message is still valid.

24. The optical network according to claim 19 wherein the message includes a message type field, a first node ID field, a second node ID field, a wavelength ID field, and a failure type field.

25. The optical network according to claim 24 wherein the message further includes a priority field.

26. The optical network according to claim 19 wherein the optical network is a bi-directional path switched ring network.

27. The optical network according to claim 19 wherein the condition is caused by a failure relating to the optical path.

28. The optical network according to claim 19 wherein the condition is caused by network maintenance to be performed on the optical path.

29. A node for use in an optical network, comprising:

first control logic configured to:

detect a condition indicating that signals from a first optical path to the node need to be re-routed via a first protection path in order to reach the node;

upon detecting the condition, generate a message;

upon generating the message, reserve a first wavelength in the first protection path, wherein the first wavelength corresponds to the signals from the first optical path so as to allow the signals from the first optical path to be re-routed via the first protection path; and

forward the message to a first neighboring node; and

second control logic configured to:

receive an incoming message from a second neighboring node;

examine the incoming message and reserve a second wavelength in a second protection path, wherein the second wavelength corresponds to signals from a second optical path so as to allow the signals from the second optical path to be re-routed via the second protection path; and

if the signals from the second optical path are originated from the node, generate and transmit an acknowledgment message to the second neighboring node, and if the signals from the second optical path are not originated from the node, forward the incoming message to an adjacent node.

30. The node according to claim 29 further comprising:

contention control logic configured to resolve contention arising out of reservation of the first wavelength and the second wavelength respectively.

31. The node according to claim 29 wherein the optical network is a bi-directional path switched ring network.

32. The node according to claim 29 wherein the condition is caused by a failure relating to the first optical path.

33. The node according to claim 29 wherein the condition is caused by network maintenance to be performed on the first optical path.

34. A method for re-routing signals from an affected optical path in an optical network, comprising:

detecting a condition at a destination node that is to receive the signals, the condition indicating that the signals need to be re-routed via a protection path in order to reach the destination node;

generating a message that includes information relating to the signals;

directing the destination node to reserve a wavelength in the protection path, wherein the wavelength corresponds to the signals so as to allow the signals to be re-routed via the protection path;

forwarding the message via one or more intermediate nodes to a source node that originates the signals;

directing each intermediate node which receives the message to reserve the wavelength in the protection path;

upon receiving the message at the source node, directing the source node to reserve the wavelength in the protection path and generate and transmit an acknowledgment message to the destination node via the one or more intermediate nodes.

35. The method according to claim 34 further comprising:

resolving priority between the message and a second message with respect to reserving the wavelength in the protection path.

36. The method according to claim 34 further comprising:

upon receiving the acknowledgment message, directing the one or more intermediate nodes and the destination node to check whether the message remains valid.

37. The method according to claim 34 wherein the optical network is a bi-directional path switched ring network.

38. The method according to claim 34 wherein the condition is caused by a failure relating to the affected optical path.

39. The method according to claim 34 wherein the condition is caused by network maintenance to be performed on the affected optical path.